

भारत सरकार (GOVERNMENT OF INDIA)  
रेल मंत्रालय (MINISTRY OF RAILWAYS)  
रेलवे बोर्ड (RAILWAY BOARD)

EF No. 2022/CE-II/CS/IRPWM2020

New Delhi, dated 14.06.2023

**The General Managers (Engg.)-** CR, ER, ECR, ECoR, NR, NCR, NER, NFR, NWR, SR, SCR, SER, SECR, SWR, WR, WCR and Metro Railway/Kolkata.

**The General Manager (Const.), N.F. Railway, Guwahati.**

**The General Manager/CORE/Prayagraj**

Principal Financial Advisor, All Indian Railways

The CAO/Const. All Indian Railways.

The General Managers (Engg.) – ICF/Chennai, RCF/Kapurthla, BLW/Varanasi, CLW/Chittranjan, Rail Wheel Factory /Yelahanka, Bangalore & PLW/Patiala.

The Director General (Track), RDSO/Alambagh, Lucknow.

Chief Commissioner of Railway Safety, Lucknow.

Managing Director, IRCON, New Delhi.

Managing Director, RITES Bhawan, 1, Leisure Valley Rd, Sector 29, Gurugram, Haryana

Managing Director, DMRC, Metro Bhawan, Barakhamba lane, New Delhi.

Managing Director, CONCOR, New Delhi.

Managing Director, RVNL, August Kranti Bhawan, Bhikaji Cama Place, New Delhi.

Managing Director, DFCCIL, Pragati Maidan, Metro Station, New Delhi.

Managing Director, PIPAVAV Railway Corp. Ltd., 14th Floor, B-Wing, Statesman House 148, Barakhamba Road, Canaught Place New Delhi Central Delhi

Managing Director, MRVC, Church Gate station Building 2nd Floor, Mumbai – 400020.

Managing Director, RLDA, Unit No.702-B, 7<sup>th</sup> Floor, Konnectus Tower-2, DMRC Building, Ajmeri Gate Delhi 110002

Managing Director, Konkan Railway Corporation Ltd, Belapur Bhawan, Sector-11, CBD Belapur. Mumbai. Pin - 400614.

Director General, IRICEN, Pune.

Director General, IRIEEN, Nasik.

Director, IRISSET, Secunderabad.

Director, IRIMEE, Jamalpur.

Director General, IRITM, Vill. Kanausi, Hardoi, Manik Nagar, Lucknow.

Director General, NAIR, Vadodara.

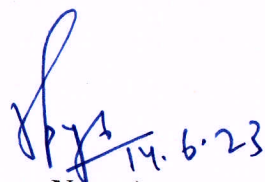
Genl. Secretaries, AIRF, NFIR, IRPOF, FROA, DAI (Railways) Rail Bhawan, New Delhi.

**Sub: Correction Slip No.13 to the Indian Railways Permanent Way Manual 2020.**

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Ministry of Railways (Railway Board) has decided that correction/addition as indicated in the enclosed Correction Slip No.13 dated 14.06.2023, to relevant para of IRPWM-2020 be made.

Receipt of this letter may please be acknowledged.

  
(Pradeep Nagar)  
Executive Director Civil Engg.(Plg.)  
Railway Board

Copy to:-

Sr. PPS/PS to CRB & CEO, MF, MI, M(T&RS), M(O&BD), Secretary.  
AM(CE), AM(Works), AM(Budget), AM(Traction), AM(Fin.), AM(Sig.), AM(Plg.),  
AM(Mech.Engg.), AM(PU.), AM(Tele.), AM(Traffic), AM(M&BD), AM(T&C), AM(Comml.).

PED(Bridge), PED(Vigilance), PED(Safety), PED(Staff), PEDCE(P), PEDTT(M),  
EDTK(M&MC), EDCE(G), EDCE(B&S), ED(L&A), ED/GS/SD, ED/Transf., ED/GS(Civil)-II,  
EDV(E), ED/GS(Civil)-I, ED(Safety), EDF(X)I, EDF(X)II, EDTK(P&P), DTK(MC), DTK(M),  
DCE(B&S), Dir./GS(Civil)-III, Dir./GS(Civil)-I, DVE-I & DVE-II,

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## INDIAN RAILWAYS PERMANENT WAY MANUAL, 2020

### ADDENDUM AND CORRIGENDUM SLIP NO. 13 DATED 14.06.2023

Para 335, 410, 635(2) (c) and 910 (1) of Indian Railway Permanent Way Manual 2020 shall be replaced with the following:

#### **Para 335 : Thermal Forces in LWR/CWR**

Temperature changes cause movement of the ends of LWR/CWR in the breathing lengths but the central portion of LWR/CWR does not expand/contract. This results in building up of thermal forces in the central portion. The thermal force (P) calculated by:

$$P = E A \alpha t$$

Where,

P = Thermal force in the rail (kg)

E = Modulus of elasticity of rail steel ( $2.11 \times 10^6 \text{ kg/cm}^2$ )

A = Area of cross section of the rail ( $\text{cm}^2$ )

$\alpha$  = Coefficient of linear expansion of steel ( $1.152 \times 10^{-5}/^\circ\text{C}$ )

t = Variation of rail temperature from  $t_d/t_0$  ( $^\circ\text{C}$ )

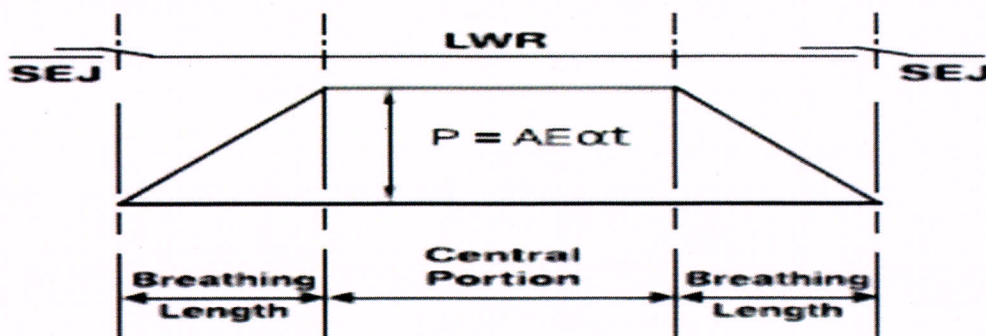
Rail Section	Cross-sectional Area ( $\text{cm}^2$ )
60 Kg/m	76.86
52 Kg/m	66.15

The range of  $t_d$  or  $t_0$  shall be within the limits of rail temperature shown below:

Temperature Zone	Rail Section	Range
I, II, III	All Sections	$t_m$ to $t_m + 5^\circ\text{C}$
IV	52 kg/m & heavier	$t_m + 5^\circ\text{C}$ to $t_m + 10^\circ\text{C}$

Usual breathing lengths on PSC sleepers for different temperature zones and sleeper density is shown in **Annexure-3/16**.

The level of maximum thermal stresses in LWR depends upon variation of rail temperature from the stress free temperature. The thermal force diagram in LWR is shown as under (**Fig 3.5**):



**Fig. 3.5: Force Diagram in LWR/CWR**

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#### **Para 410 : No Change of Super-elevation over Turnouts**

There should be no change of cant between points 20 metres outside the toe of the switch and 20 metres beyond the nose of the crossing. Normally, turnouts should not be taken off the transitioned portion of a main line curve. However, in exceptional cases, when such a course is unavoidable, a specific relaxation may be given by the Chief Track Engineer of the Railway maintaining uniform cant over the length mentioned above.

#### **Para 635 (2) (c)**

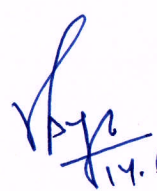
Each gang should have the following minimum equipment—

- (i) Level-cum-gauge.
- (ii) Two set of hand signal flags, red and green (2 hand signal/LED lamps at night).
- (iii) 10 detonators.
- (iv) Steel scale 30 cm long.
- (v) Straight edge 1 metre long.
- (vi) Square.
- (vii) Hemp cord.
- (viii) Keying and spiking hammer.
- (ix) Marking chalk.
- (x) Rail thermometer.
- (xi) Sufficient No. of shovels, Phowrahs, beaters, crow-bars, Ballast-forks or rakes, mortar pans or baskets.
- (xii) Wooden mallet or Canne-a-Boule.
- (xiii) Feeler gauge.
- (xiv) 2 no. whistle thunderers.
- (xv) Jumper and Gloves (for electrified section) - 02 sets

#### **Para 910 (1)**

The equipment for a level crossing shall be as follows; in addition to such others as may be prescribed by special instructions—

- (a) Two hand signal rechargeable LED lamp with tri-colour light /K Oil H S lamp, tri-color provided with bright reflectors
- (b) 1 hand signal flag, green
- (c) 2 hand signal flags, red
- (d) 1 staff suitable for exhibition of red lamp or red flag
- (e) 2 long spare chains with “stop” marked disc attachment at the centre to cover the full width of the gate, for use in case the gates/ barriers are damaged (**Annexure - 9/2**).
- (f) 2 spare small chains and padlocks for locking gates, in case locking arrangements of gates become defective.
- (g) 10 nos. detonators in tin case.
- (h) 1 tin case for flags.
- (i) 2 nos. Banner flags.
- (j) 1 canister for muster sheet.(For Engineering gates only)
- (k) 1 can for oil (Only at gates where K oil hand lamps are still in use)

  
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- (l) 1 tommy bar.
- (m) 1 water pot or bucket.
- (n) 1 mortar pan.
- (o) 1 phowrah.
- (p) 1 rammer.
- (q) 1 pick-axe.
- (r) 1 tool list (with columns drawn for checking of tools).
- (s) 1 book of safety rules in Hindi, Regional language and English(This is already part of gate working instructions)
- (t) Duty roster.
- (u) Complaint book for road users.
- (v) Inspection register.
- (w) Level crossing working instructions containing safety rules
- (x) Two gate lamps (Electric/ Kerosene type).
- (y) Gatemen working on double line/multiple lines, ghat sections, suburban and automatic block territories shall be provided with three warning signals as prescribed in **Para 817**. Gatemen working on single line sections shall be supplied with two warning signal. Gates provided with rechargeable lamps with flashing red light, will serve the above purpose.
- (z) Diagram indicating the method of protection to be adopted, in case of obstruction in the level crossing (**Annexure - 9/7**)
  
- (z) (i) Wall clocks to enable the gateman to correctly record the time of exchange of private number, expected and actual time of passage of train, time for opening and closing of level crossing etc.
- (z) (ii) Whistle thunderer – 1 No.
- (z) (iii) Jumper and Gloves (for electrified section) - 02 sets

**Note**– In case of level crossings in multiple lines, the hand signal flags/lamps, detonators and banner flags shall be increased suitably.

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